ASD Weekly Highlights for the Week Ending 24-Feb-2006

Operations

- Shut Down for Installation
- Analyzing performance data
- Switching to database version for next run for weekly reports

- Equipment Hand-back and turn-over
- We will begin enforcing the Equipment Hand-back rules. If maintenance/repair/ upgrade takes overnight.

- Staffing:
- 2 Accelerator Chief Operators accepted including our First female Chief
- Accepting Applications for
    - 3 Accelerator Operators
    - Operability/Maintenance Coordinator

- Smoke Detector Bypass Issues

- Water Leak Electrical Issues
- Daily Order
- Procedure

- Water Leak Disposal Issues
- Sanitary System
- Process Waste System

- Preparation for ARR
- Completing ARR Post-Start Action Items
- Meeting at 2:00

- Work Control
- Presentation perhaps next Tuesday afternoon
- Possible Datastream demo for Corrective Maintenance
- Corrective Maintenance involves Maintenance Coordinator meeting with Karen Cox to set up schedule, but for either of these, Equipment must be barcoded and loaded into Datastream to begin this process

Accelerator Physics

- The first round of ring commissioning finished 13/Feb/06. More beam time was expected 16-20/Feb but water problems prevented any ring operations. During 9-13/Feb operations we set new intensity records: about 8 uC bunched beam and about 16 uC coasting beam. We also made first measurements of beam instabilities in the Ring.
- We see evidence for an impedance driven instability at about 6 MHz, as expected, most likely due to the extraction kicker impedance. We also see evidence for the electron-proton beam instability. Neither of these instabilities appear to be severe enough to limit the performance of the Ring at the baseline intensity. Please note that these measurements and conclusions are still very preliminary.

RF Systems

LINAC

- Upgrade of filament power supplies is in progress. Seven units completed this week.
- Loss measurements in progress on SCL LLRF cables.
- One of the MEBT amplifiers is being upgraded (solid-state preamp).
- Supporting target completion with 1 FTE technician.
- Working to assemble and install 805 MHz, 5 MW klystron in RFTF.

Ring

- Added additional ferrite cores around the cavity tuning supply cables to further reduce rf coupling into the beam diagnostics system.
- Working on completing still outstanding system installation issues.
- Working to understand and improve the LLRF system performance with heavy beam loading.

Ion Source

- We have retaken ownership of the FrontEnd ion source to perform maintenance and implement improvements. The upgrade efforts focus on improving the safety of LOTO verifications and improving availability by reducing repair times.

- For an extended period of time the test stand has run our external antenna source with 34 mA average current during the 0.2 ms long pulses at 10 Hz.

- We have provided J.G. Wang from the mechanical group with the “PBO lab” platform and the “TRANSPORT” module. We also supplied a set of “first order” beam optics parameters, which will be the starting values for his 2nd order calculations to study the beam transport in a robust LEBT proposed for the SNS power upgrade project.

Instrumentation and Controls

- In the area of Global Controls:
- Additional (spare) MPS interface chassis were fabricated
- Our semi-annual air filter cleaning/replacement (planned maintenance) program was conducted. Equipment ID's (i.e. bar-codes) were verified as part of the exercise in preparation for loading IOC maintenance planning information into DataStream.
- A campaign to reorganize our Archiver data is in progress.
- A concerted effort to educate people who use timing to trigger diagnostics is starting to pay off. People are correctly stating how timing works in meetings and discussions, and with that an increased confidence in using timing to look at beam signals is being realized.
- The first draft of a driver for a Caen digitizer is now running. Plans are to add this digitizer to the timing system.

- Diagnostics installation/development highlights included the following:
- Testing of an ETS card revision for XFD continued. All known bugs and unwanted features have been corrected. There are now 8 additional user-defined RTDL capture registers. The interrupt capabilities are under extensive testing at the moment. Spares for the Linac and Ring BPM are being repaired and ordered.
- There is now a process running full time to populate the development database with Diagnostic PC Hardware information and the PC environmental conditions (e.g. Motherboard types, BIOS version, NIC, etc and CPU temp, fan speeds, and voltage readings). The next step will be to make this information available on the web. Lastly, some of them will be made into PVs similar to those displayed via vxstats.

- Discussions took place on how to address the correlation found between cryomodule pressure and daily RF resonance error fluctuations. These are of interest because we want to minimize cycling the tuner motors.

- A planned outage of PPS services began this week in order to implement access control over new areas of SNS (e.g. areas in the Target Building). Target PPS integration testing is now in progress. Instrument PPS PLC programming for BL-2 is also in progress. PPS-related EPICS software development continued (e.g. RTBT PLC tags were updated; EDM screens and the database for Target PPS PLC-A, PLC-B, and Chipmunks were implemented).

- Checkout of Target process controls continued in earnest. Calibration of process instruments continued. Control logic was modified to fix problems and implement functional changes requested by Target Operations (e.g. interlock logic was changed to isolate the core vessel and dump mercury in the event of target mercury or water leaks). Testing of MPS inputs was conducted for the Hg loop and all four water loops. Target loop MPS trip summary screens are being improved.

SRF Facility

Project Upgrade

Survey and Alignment

- RTBT:
  Repeatability test on harp flange pneumatic positioning.
  Begin flange alignment on rad-hard quads QH30 & QV29 prior to welding.
  QH30 DS vacuum flange and DS pipe flange aligned again prior to welding.
  QH30 US vacuum flange aligned.
  Equipment gathered and staged for DH13 antenna alignment prior to magnet mapping.
  QH30 US and DS vacuum flanges aligned once again prior to welding.
  Set Rad-hard guide "Z buttons" in the RTBT
- TARGET:
  BL17: Set 4 base plates for elevation.
  BL4A&B: Chopper alignment/mapping in situ continuing.
  BL4B: Transfer elevation from Goiniostat to adjacent wall.
  Complete the alignment of BL4A and BL4B choppers in situ.
- Miscellaneous:
  Continued modeling beam trajectory in the Ring Injection area

Cryo Systems

Mechanical Systems

Shielding progress.

Ring Systems Installation Activities

· The RTBT beamline at DH13 was isolated and vented for magnet disassembly and removal.
· The RTBT quad magnets QV13 and QH14 were disconnected and removed from the beamline.

· The RTBT quad magnet DH13 was disconnected and removed from the beamline for removal of the chamber and insertion of the mapping coil.
· The RTBT quad magnet DH13 with mapping coil was reinstalled in the beamline, reconnected and setup for mapping.
· The RTBT tunnel "T" section Duratek and concrete block shielding was removed.
· The RTBT tunnel "T" section installation alignment buttons were aligned and welded in position.
· The RTBT Target Quads/HARP air and He lines' installation continued.
· The RTBT to Target Flight Tube vacuum flange was aligned and prepped.
· The RTBT HARP vessel beamline flanges were aligned and prepped.
· The RTBT Target Quad Q30 chamber beamline flanges were aligned and prepped.
· The RTBT Target Quad magnet Q30 chamber/bellows assy was welded and leak tested
· The RTBT Target Quad Q29 chamber beamline flanges were aligned and prepped.
· The RTBT Target quad overhead shielding blocks' welding assembly continued

Ring Water Systems Installation

- The RTBT Magnet cooling to magnet QH26 was sufficient to complete the magnet's power test.
· The RTBT Magnet cooling sub-header to magnet QH26 developed a gasket leak and emptied a large quantity of water into the tunnel.
· The RING magnet cooling system was refilled and returned to operation.
· The RTBT Target quad DC buss cooling header electrical isolator installation was started.
· A Ring magnet cooling system leak monitoring system proposal was drafted.

Electrical Systems

Power Supplies

- Making up component spare's list for all power supplies
- Assembled and installed PSI RC and transient filters on all extraction kicker Power Supply Interface units
- Meeting on reducing extraction kicker noise, plan to supply 208 vac from house power substation to the diagnostic room in the RSB
- Fabricating a prototype aluminum spacer to hard ground the kicker HV return conductor
- Installed oil dams across door's thresholds and at the base of the south wall of PFN room
- Replace leaking oil pumps and repaired other oil leaks in PFN room
- Pulled out the unused MPS cables from the extraction kicker racks all the way back to the MPS equipment racks to eliminate noise pick-up
- Supported the magnet measurement group on work with magnet DH13 in the tunnel. This included installation of a Shunt / DCCT for RTBT_MAG:PS_DH13 Mapping and Disassembly of RTBT_MAG:PS_QV13 and RTBT_MAG:PS_QH14
- Prepared for PFN Kicker Noise Study (Diagnostics Racks Powered off PSSO Transformer)
- Tested and calibrated the PSIs that were repaired at Apogee and placed them back in spares
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Modulator

- Design work for NC linac modulator choke coil winding assembly

- SCL-Mod9 control chassis timing investigations
- Installation of new choke assembly in SCL ME1
- Change oil filter in SCL ME1
- Process oil in SCLME-1 with Baron unit
- Testing of oil insulation properties in all HVCMs
- Installation of new Oil Heater and Oil Pump controls in SCL ME1, initiated installation in the remaining modulators
- Adjusted primary bus plates on SCL ME1
- Repair defective IGBT driver card
- Resume work on new design IGBT drivers
- Build up of spare SCR fiber optic interface cards

Installation Activities

- Move RTBT AC Circuit to facilitate LOTO
- RTBT Rad Hard Quad Copper Buss installation
- Rad Hard Insulators installation in RTBT Tunnel
- Harp Cable installation
- Review SRO work in progress and completion for Hazelwood work to start in RTBT area for next week for ASD and XFD

Work for XFD

- Research mechanics preformed Wiring for XFD (Bill McHargue)
- Stepper Motor Instrumentation Panel Fabrication for Target
- Ordered cable and materials for Ron Battle's Target work.
- Drawing design revisions and supervision support for Beam line 4A and 4B.
- Support PPS for beam line 4A and 4B

Other

- Members of the group Participated in ESC meeting and ring power supply LOTO verification design
- LEBT chopper design effort in preparation for CDR/PDR in late March
- Troubleshooting and repair of LEBT "C" chopper switch
- Joey Weaver Responded to an emergency call-in on Saturday, February 18, 2006, to lock out the ring tunnel and the RTBT tunnel due to the water leak in the tunnel
- Members of the group walked tunnel down Monday morning after water incident over the weekend
- Teresa Toomey completed the RSS for the RTBT SB.
- Members of the group served on research mechanic selection panel.
- Roy Cutler attended Safety Observation Training class.